Assignment 6

Textbook Assignment: “Oxygen Systems.” Pages 4-4 through 4-18.

Learning Objective: Identify safety precautions, components, typical systems, and maintenance procedures for gaseous oxygen systems.

6-1. A minimum of 50 psi must be maintained in a gaseous oxygen supply cylinder. What could be the result of not maintaining this minimum pressure?

1. The oxygen regulators would not function properly
2. The crew member’s masks would not function properly
3. Cockpit odors would be allowed to enter the oxygen cylinders
4. Moisture would be allowed to accumulate in the cylinders

6-2. Pressurized oxygen is potentially very dangerous, therefore; personnel must be very knowledgeable and extremely cautious when handling oxygen or servicing and maintaining oxygen systems.

1. True
2. False

6-3. Personnel servicing or maintaining oxygen systems and components must be meticulously careful to protect systems from which of the following substances?

1. Grease and oil
2. Hydraulic fluid
3. Both 1 and 2 above
4. Type 1 trichlorotrifloroethane

6-4. When oxygen cylinders are handled or transported, the valve protection cap must be in place and, prior to removing the cap and opening the valve, the cylinders must be firmly held in place.

1. True
2. False

6-5. Anyone familiar with the established color codes provided in MIL-STD-101A can identify the contents of a cylinder as oxygen because it is painted what color?

1. Gray
2. Blue
3. Green
4. Yellow

6-6. Oxygen cylinder valves are equipped with a fusible metal safety plug filled with a fusible metal designed to melt within what temperature range?

1. 190° to 207°F
2. 208° to 220°F
3. 221° to 245°F
4. 246° to 268°F

6-7. The self-opening (automatic) oxygen cylinder valve is automatically opened under what conditions?

1. When the pilot inhales
2. When a lever is positioned to ON
3. When the pressure is over 500 psi
4. When it is connected to the oxygen line

6-8. Which of the following regulator maintenance tasks are NOT performed by AMEs?

1. Removal
2. Installation
3. Repairs
4. Operational checks

6-9. The tubing used in aircraft high--pressure oxygen systems is made from which of the following types of metal?

1. Copper
2. Steel
3. Bronze
4. Aluminum

6-10. What lines run from the oxygen cylinders to the regulators?

1. Filler
2. Cylinder
3. Regulator
4. Distribution

6-11. Oxygen lines are identified by strips of what color paint and/or tape?

1. White paint
2. Blue and white tape
3. Green and white tape
4. Green paint

6-12. At what minimum pressure is type N tubing pressure tested?

1. 300 psi
2. 450 psi
3. 1,800 psi
4. 3,000 psi

6-13. For which of the following connections is high-pressure tubing NOT used?

1. The cylinder valve and the regulator inlet in high--pressure systems
2. The cylinder valve and the pressure reducer in reducer high-pressure systems.
3. The pressure reducer and the outlets in reduced high--pressure systems
4. The oxygen cylinder valve and the filler connection in bath high and low-pressure systems

6-14. Adapters and fittings are connected to the ends of copper tubing in high-pressure oxygen systems in what manner?

1. Flared
2. Electric arc welded
3. Silver soldered
4. Tin and lead soldered

6-15. Some later models of naval aircraft with high-pressure oxygen will have which of the following types of tubing in the oxygen system?

1. Aluminum-alloy
2. Stainless steel
3. Both 1 and 2 above
4. Aluminum

6-16. If a line in a gaseous oxygen system ruptures, the loss of the entire oxygen supply is prevented by which of the following valves?

1. Check
2. Filler
3. Shutoff
4. Pressure-reducing

6-17. Check valve castings have arrows embossed on them to provide what information?

1. The direction of the master oxygen supply
2. The direction of flow through the valve
3. The section of the valve to be mounted facing aft
4. The section of the valve to be mounted facing forward

6-18. In some oxygen systems, high cylinder pressure is changed to a low working pressure by which of the following valves?

1. Pressure-reducing
2. Manifold control
3. Cylinder control
4. Filler control

6-19. Pressure reducers are always in what locations?

1. Oxygen distribution lines
2. Cylinder outlet caps
3. Filler valve inlets
4. Regulator outlets

6-20. What valve, located within the common filler valve, opens during the oxygen system filling operation and closes when filling is complete?

1. Check
2. Shutoff
3. Regulator
4. Pressure-reducing

6-21. If the pressure gauge on a 500 psi low-pressure system indicates 125 psi, what fractional part of the oxygen is left?

1. One-fourth
2. One-half
3. Two-thirds
4. Three-fourths

6-22. High-pressure gaseous oxygen system pressure gauges mounted at each flight statiom are calibrated to indicate pressure ranging from 0 to what maximum pressure?

1. 500 psi
2. 1,500 psi
3. 1,800 psi
4. 2,000 psi

6-23. What type of oxygen system usually uses pressure reducers in the distribution lines?

1. Law-pressure system
2. High-pressure system
3. Reduced high-pressure system
4. Reduced low-pressure system

6-24. In the reduced high-pressure oxygen system, a malfunctioning pressure reducer will be indicated by which of the following actions?

1. Rapid decline of quantity on the quantity gauge
2. Illumination of the low quantity light
3. Both 1 and 2 above
4. Rupture of the green disc in the discharge indicator

6-25. What items or devices should be used as a handle to carry the portable oxygen walkaround unit?

1. Regulator
2. Straps
3. Breathing tube
4. Copper tubing

6-26. An AME can intelligently locate a malfunctioning component in a gaseous oxygen system without being familiar with the system or knowing the function of each component within the system.

1. True
2. False

Learning Objective: *Identify safety precausions, components, installation and testing of components, and operating procedures for liquid oxygen (LOX) systems.*

6-27. Liquid oxygen will remain a liquid under normal atmospheric pressure at what temperature?

1. -320°F
2. -297°F
3. -220°F
4. -182°F

6-28. What is the expansion ratio of liquid oxygen to gaseous oxygen?

1. 962-1
2. 862-1
3. 782-1
4. 692-1

6-29. Personnel that could be exposed to accidental spillage of LOX must wear which of the following equipment?

1. Face shield
2. Gloves and oxygen safety shoes
3. Coveralls
4. Each of the above

6-30. The combustion supporting potential of oxygen is a greater danger than freezing.

1. True
2. False

6-31. When transferring LOX from one container to another, which of the following precautions should be taken?

1. Pour slowly to avoid splashing the liquid out of the container
2. Four slowly to allow the receiving receptacle to cool sufficiently without thermal breakage
3. Both 1 and 2 above
4. Minimize LOX from venting into the atmosphere by pouring as rapidly as possible

6-32. How many psi of pressure will LOX generate if it is allowed to evaporate at atmospheric pressure in a sealed container that has no relief provisions?

1. 10,000
2. 12,000
3. 14,000
4. 16,000

6-33. The pressure relief assembly in LOX system storage vessels consists of which of the following items?

1. A ruptured disc
2. A reseatable relief valve
3. Both 1 and 2 above in series
4. Both 1 and 2 above in parallel

6-34. Which of the following statements is correct concerning the stowage of LOX containers?

1. Hydrocarbons in the vicinity of stowed LOX containers do not present a hazardous condition
2. LOX containers should not be stowed in the vicinity of flammable gases or liquids
3. Because of the insulation in LOX containers, open, outside stowage is desirable
4. Stowage of LOX containers must be in refrigeration spaces

6-35. When dealing with LOX leakage or spillage, which of the following actions should be taken?

1. Immediately mop up the LOX and hose down with water
2. Immediately hose down the area with water
3. Dilute the LOX with a caustic soda and hose down with water
4. Ventilate the leakage or spillage to allow LOX to evaporate into the atmosphere

6-36. What action should be taken when an article of clothing you are wearing comes in contact with LOX?

1. Separate the article of clothing from skin contact immediately, and thoroughly air clothing to allow dilution of the oxygen
2. Apply large quantities of water to the clothing area that has come in contact with the LOX
3. Remove the contaminated article of clothing and discard
4. Remove the contaminated article of clothing for washing

6-37. For what reason must a completely empty aircraft LOX converter be serviced slowly?

1. To allow the system to be completely filled
2. To prevent possible damage to the converter by thermal shock
3. To allow the safety valves in the system time to adjust to the servicing
4. To prevent the thermal relief valve from operating prematurely

6-38. What is the advantage of using liquid oxygen systems over gaseous oxygen systems on aircraft?

1. Liquid systems are 1ess dangerous
2. One LOX converter replaces several cylinders of gaseous oxygen
3. Liquid systems are more efficient
4. Liquid oxygen is more economical to manufacture

6-39. A LOX converter consists of a steel inner and outer shell. If a leak should develop in the inner shell an explosion could occur. Which of the following components prevents an explosion from occurring?

1. Pressure relief valve
2. Blowout disc
3. Pressure regulator
4. Each of the above

6-40. When servicing an aircraft LOX system, what prevents liquid from flowing into the oxygen system supply port?

1. One-way check valve
2. Isolation valve
3. Filler valve
4. Two-way check valve

6-41. During servicing of an aircraft LOX system, a means for venting is needed. What valve in the oxygen system provides this venting?

1. Spring-loaded check valve
2. Pressure relief valve
3. Vent valve
4. Filler valve

6-42. If for some reason the spring fails to tightly hold the poppet in the filler port on its seat after the LOX cart has been disconnected from the aircraft, oxygen from an aircraft's converter will not escape into the atmosphere because of what valve or poppet?

1. Check valve in the filler port
2. Check valve in the converter supply line
3. Finer valve supply poppet
4. Converter pressure control valve

IN ITEMS 6-43 THROUGH 6-48, SELECT FROM COLUMN B THE LOX SYSTEM COMPONENT THAT PERFORMS THE FUNCTION LISTED IN COLUMN A. COMPONENTS IN COLUMN B MAY BE USED MORE THAN ONCE.

	A. Functions	B. Components
6-43.	Operates when the pressure control valve malfunctions	1. Pressure opening valve
6-44.	Controls the flow of gaseous oxygen into the supply line	2. Pressure closing valve
6-45.	Prevents system contamination when the converter is removed	3. Relief valve
6-46.	Prevents excess pressure from building up in the system when not in use	4. Quick-disconnect coupling
6-47.	Allows easy removal of the LOX converter from the aircraft	
6-48.	Maintains operating pressure within the converter	

6-49. What is the purpose of the heat exchanger in a LOX system?

1. To cool the LOX leaving the servicing cart to prevent damage to the aircraft's LOX converter
2. To increase the temperature of the LOX leaving the aircraft's converter
3. To prevent damage to the lungs of the crew member breathing the oxygen
4. To convert the LOX to gaseous oxygen

6-50. What is the purpose of the low-pressure switch in an aircraft's oxygen supply line?

1. To operate the oxygen caution light
2. To cut off oxygen servicing when the aircraft system is full
3. To warn personnel servicing the aircraft that the system is approaching full
4. To complete the electrical circuit to the LOX quantity indicator

6-51. How does a crew member know when the LOX(system is in a low state?

1. By dchecking the quantity indicator
2. By the illumination of a low quantity light
3. By both 1 and 2 above
4. By checking the oxygen pressure gauge

6-52. What is incorporated in the LOX system to protect the pressure regulator and crew member from excessive pressure should the LOX converter malfunction?

1. A thermal expansion valve located between the LOX converter and the oxygen regulator
2. A thermal expansion valve located in the LOX converter
3. A relief valve located in the LOX converter
4. A relief valve located in the oxygen shutoff valve

6-53. Which of the following types of tubing is used in LOX systems aboard aircraft?

1. Low-pressure aluminum alloy
2. High-pressure aluminum alloy
3. Low-pressure stainless steel
4. High-pressure stainless steel

IN ITEMS 6-54 THROUGH 6-58, SELECT FROM COLUMN B THE ACTION THAT RESULTS FROM THE MINIATURE OXYGEN BREATHING REGULATOR FUNCTIONS LISTED IN COLUMN A. ACTIONS IN COLUMN B MAY BE USED MORE THAN ONCE.

	A. Functions.	B. Action
6-54.	Oxygen flow from the paddle base area produces a pressure drop behind the demand valve diaphragm	1. Oxygen flow
6–55.	The sensing diaphragm returns to the balanced position	2. Safety pressure obtained
6-56.	The small volume bleed vent closes the aneroid vent and builds up pressure on the sensing diaphragm	3. Automatic pressure breathing
6-57.	The sensing diaphragm force is equal to the aneroid chamber force	4. Opens the mask exhalation valve
6-58.	The relief valve acts as a pivot device	

6-59. Which of the following are low pressure oxygen regulators?

1. Miniature and MD-2
2. Miniature and MD-1
3. MD-1 and MD-2
4. Miniature only

THE MD TYPE OXYGEN REGUATORS HAVE THREE TOGGLES. IN ITEMS 6-60 THROUGH 6-65, MATCH THE SPECIFIC TOGGLE LISTED IN COLUMN B WITH THE ACTION STATEMENT LISTED IN COLUMN A. THE TOGGLE IN COLUMN B MAY BE USED MORE THAN ONCE.

	A. Action	B. Toggles
6-60.	Used to cutoff the oxygen supply to the regulator	1. supply toggle
6-61.	Used to obtain 100% oxygen at 10,000 ft	2. Diluter toggle
6-62.	Used to deliver positive pressure to the mask at crew member demand	3. Emergency toggle
6-63.	Used for checking the fit of the mask	
6-64.	Has a position labeled normal oxygen	
6-65.	Can be placed in one of three positions	